

United States Patent [19]

Zimmerman et al.

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[54] COMPUTER DATA ENTRY AND MANIPULATION APPARATUS AND METHOD

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[58] Field of Search 340/709, 706, 712, 705, 340/725, 6; 352/50

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[57] ABSTRACT

Apparatus is disclosed for generating control signals for the manipulation of virtual objects in a computer system according to the gestures and positions of an operator's hand or other body part. The apparatus includes a glove worn on the hand which includes sensors for detecting the gestures of the hand, as well as hand position sensing means coupled to the glove and to the computer system for detecting the position of the hand with respect to the system. The computer system includes circuitry connected to receive the gesture signals and the hand position signals for generating control signals in response thereto. Typically, the control signals are used to manipulate a graphical representation of the operator's hand which is displayed on a monitor coupled to the computer system, and the graphical representations of the operator's hand manipulates virtual objects or tools also displayed by the computer.

66 Claims, 5 Drawing Sheets

